COOPERATIVE INSTITUTE FOR LIMNOLOGY AND ECOSYSTEMS RESEARCH
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The Cooperative Institute for Limnology and Ecosystems Research (CILER) was established in 1989 at the School of Natural Resources and Environment in the University of Michigan. CILER facilitates collaborative research between NOAA's Great Lakes Environmental Research Lab (GLERL), the University of Michigan, and other universities (e.g., Michigan State University).

CILER's research is categorized based on five different science themes: (1) **Climate and Large Lake Dynamics** - Address the role of anthropogenic activities in affecting larger-scale regional and global climatic conditions; (2) **Coastal and Nearshore Processes** - Elucidate the linkages between the physical, chemical, and biological conditions in nearshore regions with a primary focus on studies of sediment-water exchange and sediment transport in the Great Lakes and other ecosystems; (3) **Large Lake Ecosystem Structure and Function** - Support projects concerning Great Lakes ecology, including the cycling of critical materials, linkages between the physico-chemical environment and lake biota, and the ecological consequences of aquatic nonindigenous species; (4) **Remote Sensing of Large Lakes and Coastal Ocean Dynamics** - Develop new sensing technologies to help monitor and study freshwater and coastal environments; and (5) **Marine Environmental Engineering - A**ssess environmental risks posed by vectors for nonindigenous aquatic species and contaminated sediments and support novel engineering designs that improve the understanding of the aquatic environment.

CILER research activities have resulted in 25 scientific publications annually, of which 75% appear in peer-reviewed publications. Many of the current and future research efforts in all of the research themes focus on improving the scientific basis for generating Great Lakes ecosystem forecasts and for achieving Great Lakes restoration goals. In particular, a project in the remote sensing and coastal ocean dynamics theme that continues the long-term collaboration between CILER and GLERL is to develop and facilitate research products using remotely sensed data for the Great Lakes. Activities that utilize these remotely sensed data and products are quite diverse and include research on ice cover and ice classification, surface temperatures, turbidity, Great Lakes coastal forecasting, and algal blooms. CILER also promotes educational opportunities in aquatic research by hosting the Great Lakes National Ocean Sciences Bowl and by providing summer research opportunities for high school, undergraduate, and graduate students. CILER has hosted 8 Great Lakes National Ocean Sciences Bowls, which have drawn more than 500 participants. Also, CILER has supported more than 150 summer student fellows, who have worked on projects ranging from nutrient chemistry analysis, aquatic instrumentation development, to maritime history archiving.

CILER's research activities assist NOAA in two of its Mission Goals: 1) Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management and 2) Understand climate variability and change to enhance society's ability to plan and respond.

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